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मानक

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8271-2-2 (1981): Quartz Crystal Units Used in Oscillators, Part 2: Series AA, Section 2: Quartz Crystal Unit Yype AA-02 [LITD 5: Semiconductor and Other Electronic Components and Devices]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

(Reaffirmed 1996)

SPECIFICATION FOR
QUARTZ CRYSTAL UNITS USED IN OSCILLATORS

PART II SERIES AA

Section 2 Quartz Crystal Unit Type AA-02

0. General — This standard shall be read in conjunction with IS : 8271 (Part I)-1981 'Specification for quartz crystal units used for frequency control and selection: Part I General requirements and tests (first revision)'.

1. Outline and Dimensions — Holder outline shall conform to type AA (See sheet 1A of IS : 4570-1968 'Specification for crystal holders').

2. Marking — See 8 of IS : 8271 (Part I)-1981.

3. Construction and Workmanship — See 7 of IS : 8271 (Part I)-1981.

4. Test Schedule and Detail Requirements

4.1 General Conditions for Test — See 9.2 of IS : 8271 (Part I)-1981.

4.2 Test Schedule — The sequence and grouping of type, routine and acceptance tests shall be as per 9.1 of IS : 8271 (Part I)-1981.

4.3 Detail Requirements — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNIT TYPE AA-01

Characteristics (1)	Requirements (2)	
a) Type of holder	AA (See 1)	
b) Frequency range	1 to 20 MHz	
c) Frequency tolerance:		
i) Over operating temperature range	±50 ppm	
d) Resonance resistance	See Table 2	
e) Mode of oscillation	Fundamental	
f) Load capacitance	32±0.5 pF	
g) Capacitance shunt	7 pF, Maximum	
h) Operating temperature range	-55°C to 90°C	
j) Test set, calibration values and rated drive level	See Table 3	
k) Shock [as per 9.15 of IS : 8271 (Part I)-1981]:	1 to 2 MHz	Over 2.0 to 20 MHz
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
m) Vibration [as per 9.16.1 (severity A) of IS : 8271 (Part I)-1981]:		
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
n) Temperature cycling:		
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
p) Temperature run:		
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
q) Ageing		
Frequency change permitted	5 ppm	—

Adopted 8 May 1981

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TABLE 2 RESONANCE RESISTANCE

[Table 1(d)]

Frequency Range	Maximum Resonance Resistance	Frequency Range	Maximum Resonance Resistance
MHz	ohms	MHz	ohms
(1)	(2)	(1)	(2)
From 0.9 to 1	580	Over 3.4 to 3.75	90
Over 1.0 to 1.12	540	Over 3.75 to 4	75
Over 1.12 to 1.25	490	Over 4 to 5	60
Over 1.25 to 1.37	450	Over 5 to 7	35
Over 1.37 to 1.5	410	Over 7 to 10	24
Over 1.5 to 1.62	380	Over 10 to 15	22
Over 1.62 to 1.75	330	Over 15 to 20	20
Over 1.75 to 1.87	300		
Over 1.87 to 2	290		
Over 2 to 2.12	270		
Over 2.12 to 2.25	250		
Over 2.25 to 2.6	200		
Over 2.6 to 3	150		
Over 3 to 3.4	110		

TABLE 3 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[Table 1(j)]

Sl No.	Frequency Range	Calibration Values			Rated Drive Level
		Resistance	Crystal Current	Resistor Voltage Drop	
	MHz	ohms	mA	V	mW
(1)	(2)	(3)	(4)	(5)	(6)
1	From 0.8 to 1.5	100	10	—	10.0±2.0
2	Over 1.5 to 2.25	50	15	—	
3	Over 2.25 to 3.4	40	15	—	
4	Over 3.4 to 5.1	25	20	—	
5	Over 5.1 to 7.5	14	25	—	
6	Over 7.5 to 10	11	30	—	
7	Over 10 to 15	13	20	—	5.0±1.0
8	Over 15 to 20	10	—	0.22	5.0±1.0

For Sl No. 1 to 7 — Test Set TS-330/TSM

For Sl No. 8 — Test Set TS-683/TSM